

First-aid training in school: amount, content and hindrances

H. K. Bakke^{1,2,3} , H. K. Bakke^{4,†} and R. Schweps^{5,6,†}

¹Mo i Rana Hospital, Helgeland Hospital Trust, Mo i Rana, Norway

²Department of Anaesthesiology and Intensive Care, University Hospital of North Norway, Tromsø, Norway

³Anaesthesia and Critical Care Research Group, Faculty of Health Sciences, University of Tromsø, Tromsø, Norway

⁴Lynghaug School, Bergen, Norway

⁵Faculty of Education, Western Norway University of Applied Sciences, Bergen, Norway

⁶Ortun School, Bergen, Norway

Correspondence

H. K. Bakke, Anaesthesia and Critical Care Research Group, Faculty of Health Sciences, IKM, University of Tromsø, 9037 Tromsø, Norway
E-mail: hakonkvalebakke@gmail.com

†Equal contribution.

Conflicts of interest

Håkon K. Bakke was from 2005 to 2010 a volunteer for the Norwegian Red Cross Tromsø that receives income from first-aid courses. He has worked as first-aid instructor for Red Cross Tromsø from 2009 to 2010. None of the other authors have any conflicts of interest to report.

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Background: To increase knowledge and competence about first aid in the population, first-aid instruction is included in primary and secondary school curricula. This study aimed to establish how much time is spent on first-aid training, which first-aid measures are taught, and which factors prevent teachers from providing the quantity and quality of first-aid training that they wish to give.

Methods: A questionnaire was distributed to teachers in physical education in primary and secondary schools and to teachers in vocational subjects in higher secondary schools.

Results: The teachers taught a median of two lessons in first aid per year. Cardiopulmonary resuscitation (CPR) was taught by 64% of teachers, free airway and recovery position by 69% and stopping severe bleeding by 51%. Recognising heart attack and stroke was taught by 25% and 23%, respectively. The main factors that the teachers perceived as limiting the amount and quality of first-aid training were insufficient learning objective specifications in the curriculum, too many other competence aims, lack of CPR mannequins and lack of training as first-aid instructors.

Discussion: Norwegian teachers provide an appreciable amount of first-aid training to their students. However, several potential life-saving measures are poorly covered. The curriculum needs to contain first aid but also should specify what first-aid measures to be taught. First-aid training of teachers should adequately prepare them to be first-aid instructors.

Editorial comment

This article tells us that first-aid education is being done in Norwegian schools starting at the primary level. However, there is still room for improvement, particularly in making the curriculum more specific. Also, teachers should be better educated in their role as first-aid instructors.

First aid from bystanders is considered an important link in the chain of survival for both out-of-hospital cardiac arrest (OHCA) and trauma. Bystander cardiopulmonary resuscitation (CPR) in OHCA increases chances of survival and of avoiding sequelae.^{1–3} In trauma, an estimated 1.8–5.5% of deaths can be prevented if bystanders provide an open airway and control bleeding.⁴

Persons trained in first aid give better first aid than the untrained and are more willing to perform CPR.^{5–8} Training the lay population, thus, is regarded as an important way to increase bystander-provided first aid.⁹ Offering first-aid training in schools means reaching the majority of the population over time.⁸ Pupils can attain first-aid skills at an early age, and teachers can provide first-aid training on level with that provided by medical personnel.^{10–13} Programmes to teach schoolchildren have been associated with increased bystander CPR rates, and first aid is recommended for inclusion in school curricula.^{9,11,14–16}

First aid is part of the curriculum in the Norwegian school system; however, inclusion of first aid in the curriculum does not necessarily translate into implementation of training^{17,18} It is important also to know how much time is allocated to training and which first-aid measures are taught and how.

This study aimed to establish (1) to what extent and at what levels teachers provided first-aid training to their students; (2) which first-aid measures are taught; (3) how these measures are taught; and (4) if there are factors that prevent teachers from offering as much first-aid training to their students as they would like or lead to deficits in the quality of the first-aid training teachers can provide.

Methods

Norwegian school system and current first-aid curriculum

The Norwegian school system is divided into three parts: primary school (levels 1–7, ages 6–13 years), lower secondary school (levels 8–10, ages 13–16) and higher secondary school (levels 11–13, ages 16–19). Levels 1–10 are mandatory; in 2016, there were 2858 primary and lower

secondary schools and 452 higher secondary schools in Norway.¹⁹ First aid has been taught in schools since 1961 and is part of the current school curriculum for primary and lower secondary schools.^{20–23} Which first-aid measures should be taught is elaborated upon in the guidelines to the curricula for Education in Swimming and Rescue [which is part of physical education (P.E.)]²² The contents of the curriculum on first aid and the guidelines are provided in Table 1. For higher secondary school, the curriculum for study specialisation does not contain any first-aid training, and for vocational education, the curriculum varies depending on subject.

The questionnaire

A web-based questionnaire was distributed to all Norwegian municipalities and all counties with a request to relay the survey to all primary and secondary schools in the municipality or county and forward it to their teachers. All teachers who taught P.E. at any level or who taught vocational subjects at secondary schools were invited to participate in the survey. The survey was distributed on 22 May 2016, and one reminder was sent out on 7 June 2016. The survey ended on 2 July 2016.

The survey consisted of 27 questions, with an introduction explaining the study's purpose and aim, with information about confidentiality and handling of personally sensitive data. The questionnaire was developed by the authors using the model of Bradburn et al.²⁴ and reviewed by the questionnaire provider Questback (Questback AS, Oslo, Norway). The respondents were not held to any definition of 'First aid', but were asked to specify which specific first-aid measures had been covered. A translation of the full questionnaire is provided in the supplemental materials (Appendix S1).

A pilot study was performed by sending the questionnaire to seven municipalities and 19 schools from 9 May 2016 to 21 May 2016. The questionnaire was then revised based on the results.

Statistics

Statistical analyses were performed using SPSS Statistics for Mac version 23 (IBM Corp.,

Table 1 First aid in the Norwegian public school curriculum.

Part of curriculum mentioning first aid	Wording
Curriculum for Physical Education (KR01-04) – Competence aim for level 7	Educational aim is that the pupil shall be able to (...) <ul style="list-style-type: none"> • Perform simple first aid
Curriculum for Physical Education (KR01-04) – Competence aim for level 10	Educational aim is that the pupil shall be able to (...) <ul style="list-style-type: none"> • Explain and perform water rescue • Explain and perform life-saving first aid • Prevent and provide first aid for sport injuries
Guidelines to the curricula – Education in Swimming and Rescue*	The aims for grade 7 (...) can be specified thusly: The pupil should be able to (...) <ul style="list-style-type: none"> • Provide a free airway and place a patient in recovery position • Be acquainted with the symptoms of light to moderate hypothermia and know how to restore warmth • Be acquainted with symptoms of water aspiration • Treat small wounds and scrapes • Stop bleeding/apply bandage or dressing, consider contacting medical services The aims for grade 10 (...) can be specified thusly: <ul style="list-style-type: none"> • Explain what to do when being the first to encounter an accident scene • Explain the chain of survival • Explain circulatory failure • Perform CPR • Recognise and treat hypothermia

*Part of physical education.

Armonk, NY, USA). For questions that asked the respondent to what extent they agreed with a statement, a 5-point Likert scale was employed where 1 signified total disagreement and 5 total agreement, and the option to respond 'do not know' was always provided. When reporting mean Likert scale responses, those who had responded 'do not know' were excluded. The specific analyses used for comparisons are specified in the Results section.

Ethics

The study was approved by the Norwegian Data Protection Official for Research (Ref 48093/3/STM).

Results

Of 604 respondents, 25 were excluded because they were not teachers in P.E. or vocational subjects, and a final total of 579 teachers were included. A total of 225 were teaching P.E. at primary levels (levels 1–7), 161 at the lower secondary

level (levels 8–10), 69 at higher secondary levels (levels 11–13), and 170 were teaching vocational subjects at higher secondary levels (levels 11–13).

First-aid training in school – amount and content

In the preceding year, the teachers had allotted a mean of 2.7 lessons per level per year to first-aid training (median 2, range 0–11). Twenty-seven teachers (5%) did not provide any first-aid training to their students. The results, stratified by level, can be found in Appendix S2. Teachers who taught at levels where first aid is specified in the curriculum gave more first-aid training to their students (*t*-test, $P < 0.01$; 3.0 lessons vs. 2.3 lessons per year). For those that provided first-aid training to their students, the responding teacher was giving the first-aid education in 64% of cases; for 15%, another teacher was responsible for the first-aid training; 10% had brought in first-aid instructors from an organisation (e.g., the Red Cross); 10% had relied on health care personnel;

and 4% had some other person not in the above categories in charge of the first-aid training (including where other students were responsible). Twenty-four percent did not respond to the question. The specific first-aid measures that were covered by the various first-aid trainings are provided in Table 2. The mode of instruction and material used, as well as first-aid measures stratified by level, are given in Appendix S2.

Factors that prevent the teachers from teaching first aid

The respondents were presented with the statement, 'I would be able to give better first-aid education if', and a list of choices to rank on a Likert scale (1–5). They were then asked to list the three main reasons why they were not able to give as much first-aid education as they could wish. These results are presented in Table 3. Respondents were then presented with the same statement and question about why they were not able to give first-aid education to the quality level they wished, and these results are presented in Table 4. Teachers at different levels varied somewhat in what they reported were the most important obstacles to giving the quantity and quality of first-aid training as they could wish.

Finally, teachers were asked to estimate how many lessons in first-aid education they would plan per class per year (1–2 lessons per year, 3–4 lessons per year, etc.) to provide what they viewed as a sufficient quantity, given the same amount of time to cover the current curriculum. The mean number of lessons per level per year was 3.4, and a conservative estimate of the theoretical time allotted to first aid if the teachers had what they needed would be 4.8 lessons per grade per year (paired sample *t*-test, $P < 0.001$)

Teacher first-aid training and attitudes

Of the responding 579 teachers, 90% (552/579) had at some point taken a first-aid course or received first-aid training, 6% (36/579) were also first-aid instructors, and 4% (21/579) had no first-aid training or did not answer. A total of 48% (276/579) had received first-aid training when they themselves were in school, 46% (265/579) received it as part of teacher training, and 75% (436/579) had received training

through their employer (more than one answer possible per respondent).). The mean time since last first-aid training was 3.3 years (median 1 year, range 0–44); 57% (272/579) had received first-aid training within the last 1.5 years and 83% (393/579) within the last 5 years.

Asked whether they thought first aid was hard to teach, 16% (91/579) agreed (Likert scale: 4 or 5), 60% (349/579) disagreed (Likert scale: 1 or 2) and 19% (110/579) were neutral (Likert scale: 3). The respondents were asked if they thought teachers with some prior knowledge of first aid could provide first-aid training at the same level of quality or better than health care personnel, and 14% (82/579) agreed, 60% (346/579) disagreed, and 20% (113) were neutral. The respondents also were asked to state at what level they thought it would be appropriate to start first-aid training of children. A majority (52%, 297/579) thought first-aid training should start at level 1 (mean level 2.8, median level 1, range level 1–13). Teachers who taught at level 1 were more likely to believe that first-aid training should start at level 1 (74% vs. 53%, chi-square test, $P = 0.01$).

Discussion

The main findings of this study are that the majority of teachers in P.E. and vocational subjects provide first-aid training to their students, with a median of two lessons per level per year. However, there were several central first-aid measures that were taught to a very limited extent. The main factors that the teachers perceived as limiting the amount and quality of first-aid training were as follows:

- A curriculum that did not sufficiently specify what the student should be taught
- A curriculum that contained too many other competence aims
- A lack of CPR mannequins
- A lack of training as first-aid instructors

Most respondents taught first aid to their students, but there was considerable discrepancy in the measures taught. The measures *How to alert medical services*, *Open airway*, *Recovery position* and *Perform CPR* were relatively well covered and taught by more than 60%. (*Open airway* is to some extent taught as part of CPR, and the finding may be in the lower bounds). Other

Table 2 Specific first-aid measures taught as part of first-aid education in school.

Measure	Taught			Not taught			Sum % (n)
	Taught only theory, % (n)	Taught only practice, % (n)	Taught theory and practice, % (n)	Taught total, % (n)	Not taught, % (n)	Don't know/ Not responded, % (n)	
How to alert emergency services	42 (244)	2 (9)	23 (133)	66 (386)	2 (7)	32 (186)	100 (579)
Primary school (P.E.)	36 (82)	3 (6)	21 (47)	60 (135)	0.4 (1)	40 (89)	100 (225)
Lower secondary school (P.E.)	42 (67)	2 (3)	36 (58)	80 (128)	1 (1)	19 (31)	100 (161)
Higher secondary school (P.E.)	42 (29)	1 (1)	14 (10)	58 (40)	6 (4)	36 (25)	100 (69)
Higher secondary school (vocational subjects)	49 (84)	1 (1)	23 (39)	73 (124)	0 (0)	27 (46)	100 (170)
To recognise illness/injury	25 (142)	3 (16)	26 (151)	53 (309)	9 (51)	38 (219)	100 (579)
Primary school (P.E.)	19 (43)	3 (6)	18 (41)	40 (90)	11 (25)	49 (110)	100 (225)
Lower secondary school (P.E.)	22 (36)	2 (4)	35 (56)	60 (96)	12 (12)	28 (45)	100 (161)
Higher secondary school (P.E.)	28 (19)	6 (4)	26 (18)	59 (41)	6 (4)	35 (24)	100 (69)
Higher secondary school (vocational subjects)	32 (54)	1 (2)	34 (57)	66 (113)	4 (7)	29 (50)	100 (170)
Secure own safety (secure scene, etc.)	27 (156)	3 (16)	27 (157)	57 (329)	8 (45)	35 (205)	100 (579)
Primary school (P.E.)	21 (47)	3 (5)	38 (61)	44 (99)	9 (20)	47 (106)	100 (225)
Lower secondary school (P.E.)	22 (35)	3 (5)	38 (61)	63 (101)	15 (24)	22 (36)	100 (161)
Higher secondary school (P.E.)	25 (17)	3 (2)	28 (19)	55 (38)	6 (4)	39 (27)	100 (69)
Higher secondary school (vocational subjects)	42 (72)	2 (3)	30 (51)	74 (126)	1 (1)	25 (43)	100 (170)
How to examine a patient	10 (55)	5 (28)	49 (286)	64 (369)	3 (18)	32 (184)	100 (579)
Primary school (P.E.)	5 (12)	6 (13)	40 (90)	51 (115)	5 (11)	44 (99)	100 (225)
Lower secondary school (P.E.)	6 (10)	4 (7)	65 (105)	76 (122)	2 (3)	22 (36)	100 (161)
Higher secondary school (P.E.)	17 (12)	6 (4)	43 (30)	67 (46)	1 (1)	32 (22)	100 (69)
Higher secondary school (vocational subjects)	14 (23)	4 (6)	56 (96)	74 (125)	2 (3)	25 (42)	100 (170)
Open airway	8 (48)	6 (36)	55 (317)	69 (401)	1 (7)	30 (171)	100 (579)
Primary school (P.E.)	7 (15)	7 (15)	46 (103)	59 (133)	2 (4)	39 (88)	100 (225)
Lower secondary school (P.E.)	4 (6)	8 (13)	69 (111)	81 (130)	1 (1)	19 (30)	100 (161)
Higher secondary school (P.E.)	13 (9)	4 (3)	46 (32)	64 (44)	3 (2)	33 (23)	100 (69)
Higher secondary school (vocational subjects)	13 (22)	5 (9)	61 (103)	79 (134)	1 (1)	21 (35)	100 (170)
Recovery position	7 (43)	6 (37)	55 (318)	69 (398)	2 (10)	30 (171)	100 (579)
Primary school (P.E.)	6 (14)	8 (17)	46 (104)	60 (135)	1 (3)	39 (87)	100 (225)
Lower secondary school (P.E.)	3 (5)	7 (11)	69 (111)	79 (127)	1 (2)	20 (32)	100 (161)
Higher secondary school (P.E.)	10 (7)	4 (3)	46 (32)	61 (42)	4 (3)	35 (24)	100 (69)
Higher secondary school (vocational subjects)	11 (19)	5 (9)	62 (106)	79 (134)	1 (2)	20 (34)	100 (170)
Decide if CPR should be started	13 (77)	3 (19)	47 (273)	64 (369)	3 (15)	34 (195)	100 (579)
Primary school (P.E.)	9 (21)	4 (8)	37 (87)	50 (113)	4 (8)	46 (104)	100 (225)
Lower secondary school (P.E.)	9 (15)	6 (9)	61 (98)	76 (122)	1 (2)	23 (37)	100 (161)
Higher secondary school (P.E.)	17 (12)	1 (1)	43 (30)	62 (43)	4 (3)	33 (23)	100 (69)
Higher secondary school (vocational subjects)	19 (32)	3 (5)	54 (91)	75 (128)	2 (3)	23 (39)	100 (170)
Perform CPR	9 (51)	4 (25)	51 (297)	64 (373)	3 (15)	33 (191)	100 (579)
Primary school (P.E.)	8 (18)	4 (10)	40 (89)	52 (117)	3 (6)	45 (102)	100 (225)
Lower secondary school (P.E.)	7 (12)	5 (8)	66 (106)	78 (126)	2 (3)	20 (32)	100 (161)
Higher secondary school (P.E.)	14 (10)	3 (2)	43 (30)	61 (42)	4 (3)	35 (24)	100 (69)
Higher secondary school (vocational subjects)	9 (15)	5 (9)	62 (105)	76 (129)	2 (3)	22 (38)	100 (170)

Table 2 (Continued)

Measure	Taught				Not taught		Sum % (n)
	Taught only theory, % (n)	Taught only practice, % (n)	Taught theory and practice, % (n)	Taught total, % (n)	Not taught, % (n)	Don't know/ Not responded, % (n)	
Staunch bleeding	23 (130)	2 (14)	26 (152)	51 (296)	13 (75)	36 (208)	100 (579)
Primary school (P.E.)	17 (39)	4 (9)	18 (40)	39 (88)	16 (36)	45 (101)	100 (225)
Lower secondary school (P.E.)	26 (42)	1 (1)	22 (36)	49 (79)	21 (34)	30 (48)	100 (161)
Higher secondary school (P.E.)	26 (18)	3 (2)	23 (16)	52 (36)	12 (8)	36 (25)	100 (69)
Higher secondary school (vocational subjects)	27 (46)	1 (2)	42 (72)	71 (120)	4 (7)	25 (43)	100 (170)
Prevent hypothermia of ill/injured	23 (133)	2 (10)	15 (85)	39 (228)	19 (112)	41 (239)	100 (579)
Primary school (P.E.)	14 (32)	1 (2)	12 (27)	27 (61)	22 (49)	51 (115)	100 (225)
Lower secondary school (P.E.)	29 (47)	1 (1)	16 (26)	46 (74)	24 (38)	30 (49)	100 (161)
Higher secondary school (P.E.)	17 (12)	4 (3)	16 (11)	38 (26)	19 (13)	43 (30)	100 (69)
Higher secondary school (vocational subjects)	33 (56)	2 (4)	16 (11)	55 (93)	12 (21)	33 (56)	100 (170)
Treat burn injuries	24 (141)	1 (6)	11 (62)	36 (209)	23 (130)	42 (240)	100 (579)
Primary school (P.E.)	15 (33)	1 (3)	7 (16)	23 (52)	24 (55)	52 (118)	100 (225)
Lower secondary school (P.E.)	20 (32)	1 (1)	6 (10)	27 (43)	40 (65)	33 (53)	100 (161)
Higher secondary school (P.E.)	20 (14)	0 (0)	12 (8)	32 (22)	25 (17)	43 (30)	100 (69)
Higher secondary school (vocational subjects)	44 (75)	1 (2)	19 (33)	65 (110)	5 (9)	30 (51)	100 (170)
Treat hypothermia	19 (112)	1 (4)	9 (52)	29 (168)	28 (162)	43 (249)	100 (579)
Primary school (P.E.)	12 (26)	0 (0)	6 (13)	17 (39)	28 (64)	54 (112)	100 (225)
Lower secondary school (P.E.)	16 (26)	1 (2)	8 (13)	25 (41)	44 (71)	30 (49)	100 (161)
Higher secondary school (P.E.)	20 (14)	0 (0)	10 (7)	30 (21)	25 (17)	45 (31)	100 (69)
Higher secondary school (vocational subjects)	34 (57)	2 (3)	14 (23)	49 (83)	16 (28)	35 (59)	100 (170)
Recognise stroke	16 (95)	0.5 (3)	6 (37)	23 (135)	33 (189)	44 (255)	100 (579)
Primary school (P.E.)	8 (18)	0 (0)	4 (10)	12 (28)	33 (74)	55 (123)	100 (225)
Lower secondary school (P.E.)	12 (20)	1 (1)	3 (5)	16 (26)	51 (82)	33 (52)	100 (161)
Higher secondary school (P.E.)	12 (8)	0 (0)	4 (3)	16 (11)	32 (22)	52 (36)	100 (69)
Higher secondary school (vocational subjects)	34 (58)	1 (2)	14 (23)	49 (83)	17 (29)	34 (58)	100 (170)
Recognise heart attack	19 (108)	0.5 (2)	6 (37)	25 (147)	32 (183)	43 (249)	100 (579)
Primary school (P.E.)	10 (22)	0 (0)	2 (5)	12 (27)	33 (75)	55 (123)	100 (225)
Lower secondary school (P.E.)	13 (21)	0 (0)	5 (8)	18 (29)	50 (81)	32 (51)	100 (161)
Higher secondary school (P.E.)	17 (12)	0 (0)	9 (6)	26 (18)	26 (18)	48 (33)	100 (69)
Higher secondary school (vocational subjects)	36 (62)	1 (2)	12 (21)	50 (85)	16 (28)	34 (57)	100 (170)

measures such as *Stop bleeding*, *Treat Burn Injuries* and *Treat Hypothermia* were less well covered, and *Recognise Heart Attack* and *Recognise Stroke* were taught only by 25% and 23% of teachers, respectively. The coverage of the different measures was generally higher at the lower secondary levels; however, this survey did not measure what the individual student encounters in first-aid education on their way through the

school system. In a Norwegian study of higher secondary school students by Kanstad et al., 73% reported that they had received education in basic life support at some point during school, 31% in primary school, and 52% in lower secondary school,⁸ which seems to reflect that the majority of students encounter first-aid training at some point during their school system experience.

Table 3 Factors that prevent teachers from offering as much first-aid training to their students as they would like.

	I would give more first-aid training to my students if...				Mean score (1–5)	What are the three most important reasons you don't give as much first-aid training to your students as you could wish	
	Agree (5-4), n (%)	Indifferent (3), n (%)	Disagree (2-1), n (%)	Don't know/missing, n (%)		Percentage ranked as one of three most important reasons	Rank
<i>N</i> = 579							
The curriculum didn't contain as many other competence aims to be taught	131 (23)	130 (22)	185 (32)	133 (23)	2.79	40%	1
The curriculum had specified better what first-aid measures the students are supposed to know	271 (47)	93 (16)	105 (18)	110 (19)	3.55	39%	2
We had access to CPR mannequins	231 (40)	68 (12)	156 (27)	123 (21)	3.25	23%	3
I had first-aid instructor training	199 (34)	96 (17)	173 (30)	111 (19)	3.07	22%	4
The school management had prioritised first aid higher	206 (36)	116 (20)	132 (23)	125 (22)	3.24	21%	5
I was more proficient in first aid	176 (30)	108 (19)	194 (34)	100 (17)	2.89	19%	6
We had access to better textbooks on first aid	152 (26)	100 (17)	196 (34)	131 (23)	2.81	17%	7
Other	–	–	–	–	–	10%	8
I was not afraid to teach incorrect first-aid measures	88 (15)	72 (12)	295 (51)	124 (21)	2.22	7%	9
I had received first-aid training as part of my teacher education	157 (27)	94 (16)	195 (34)	133 (23)	2.83	6%	10
I had learned of the importance of first-aid training during my teacher education	162 (28)	97 (17)	189 (33)	131 (23)	2.87	Not ranked	Not ranked
I think my students get sufficient first-aid training	153 (26)	127 (22)	196 (34)	103 (18)	2.81	–	–
Missing	–	–	–	–	–	27 (5%)	–

A total of 26% of the respondents were satisfied with the quantity and quality of the first-aid training they provided to their students. The curriculum was identified as the main obstacle for teachers in terms of the quality and quantity they wanted to provide. The curriculum was seen as containing too many other competence aims and to be insufficiently specific about which first-aid measures the students should know. The current Norwegian curriculum states that students at level 7 should 'be able to perform simple first aid' and at level 10 should be 'able to explain and perform life-saving first aid' (Table 1). These objectives are both vague and open to interpretation, as illustrated by the great variance in which measures are actually taught. Of note, P.E. teachers who taught at levels where first aid was part of the curriculum

allotted significantly more time to first-aid training than P.E. teachers who taught at other levels. The current Norwegian curriculum has specified competence aims for first-aid training at levels 7 and 10 only. In the current structure of the curriculum, the implication thus is that first aid could be taught anywhere at levels 5–7 of primary school and anywhere at levels 8–10 for lower secondary school. Even so, these ages are considerably later than the earliest age children can be taught first-aid skills^{11,25} and at odds with the age the teachers in the current study considered appropriate for beginning first-aid training. It would probably be desirable to repeat first-aid training at several levels to facilitate better skill retention, building up skills step-by-step with age-adjusted learning.^{9,11,25}

Table 4 Factors that prevent teachers from providing first-aid education to the quality level they wished.

	I would be able to give better first-aid training to my students if...				Mean score (1–5), n (%)	What are the three most important reasons you don't provide the quality of first-aid training that you would like?	
	Agree (5-4), n (%)	Indifferent (3), n (%)	Disagree (2-1), n (%)	Don't know/missing, n (%)		Percentage ranked as one of three most important reasons,	Rank
<i>N</i> = 579							
The curriculum didn't contain as many other competence aims to be taught	154 (27)	116 (20)	206 (36)	103 (18)	2.80	34%	1
The curriculum had specified better what first-aid measures the students are supposed to know	308 (53)	87 (15)	112 (19)	72 (12)	3.63	33%	2
I had first-aid instructor training	299 (52)	73 (13)	136 (23)	71 (12)	3.55	25%	3
We had access to CPR mannequins	303 (52)	67 (12)	136 (23)	73 (13)	3.57	24%	4
I was more proficient in first aid	239 (41)	93 (16)	196 (34)	51 (9)	3.19	21%	5
The school management had prioritised first aid higher	228 (39)	124 (21)	133 (23)	94 (16)	3.30	18%	6
We had access to better textbooks on first aid	154 (27)	123 (21)	191 (33)	111 (19)	2.96	16%	7
Other	–	–	–	–	–	8%	8
I was not afraid to teach incorrect first-aid measures	114 (20)	67 (13)	197 (34)	80 (14)	2.33	7%	9
I had received first-aid training as part of my teacher education	225 (39)	67 (12)	197 (34)	90 (15)	3.12	5%	10
I learned of the importance of first-aid training during my teacher education	274 (37)	69 (13)	167 (34)	69 (12)	3.04	Not ranked	Not ranked
I think I manage to give my students first-aid training of sufficient quality	152 (26)	142 (25)	229 (40)	56 (10)	2.71	18%	–
Missing	–	–	–	–	–	8% (49)	–

Furthermore, a lack of CPR mannequins and training as first-aid instructors were main obstacles to achieving the amount and quality of first-aid training teachers wanted to provide. They were also relatively well updated on first aid, with a median of 1 year since their last first-aid training, considerably better than the general Norwegian population.²⁶ Despite this, they were generally in disagreement with the statement that teachers with some previous knowledge could provide first-aid training of similar or better quality to that provided by health care personnel. Indeed, studies on teachers as first-aid instructors have shown that they are quite able to teach first aid to their students,

on par with instruction from emergency physicians.^{10,12} It is likely that first-aid courses aimed at teachers do cover regular first aid but are not held with the intention that the participant will relay the first-aid knowledge attained to their own students. Courses aimed at teachers should preferably be tailored with this in mind.

Limitations

This survey has some limitations. It is retrospective and as such subject to recall bias. We attempted to mitigate this limitation by restricting the questions to what and how much was taught in the preceding school year. In addition,

this study did not address which first-aid measures students actually recall having been taught. We could find no overview of the number of P.E. and vocational subject teachers in Norway, so the representativeness of the results is difficult to analyse. However, if we use the number of maths teachers in primary and lower secondary schools ($n = 32,000$) as an approximation, we will have a 95% confidence level of $\pm 5\%$.

Teachers may not necessarily increase their time spent on first aid or be able to provide better first-aid instruction if their perceived obstacles were overcome; however, the main factors the teachers in this study regard as hindrances to teaching first aid should be relatively easy and inexpensive to ameliorate. This study provides an overview of which first-aid measures are actually taught in school and offers some suggestions for strengthening first-aid training in schools.

Conclusion

Norwegian teachers provide an appreciable amount of first-aid training to their students; however, several potential life-saving measures are poorly covered. The curriculum needs to contain first aid and should also specify what first-aid measures the students should learn. First-aid training of teachers should adequately prepare them to be first-aid instructors.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Appendix S1. Questionnaire (translated).

Appendix S2. Additional tables (Tables 5–8).